Benefits Transfer: Time for a Peer-Reviewed, Dedicated Journal

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Questions

- Are monetized benefits an essential part of good environmental decision making?
  - Yes, BT is necessary for policy assessments and decisions
- What is the appropriate domain of BT?
  - Routine policy analysis where the benefits of new information do do justify the costs of a new study
  - Corroboration for new estimates
- If not BT, what then?

Questions

- Are monetized benefits an essential part of good environmental decision making?
  - Yes, BT is necessary for policy assessments and decisions
- What is the appropriate domain of BT?
  - Routine policy analysis where the benefits of new information do do justify a new study
- ~~If not BT, what then?~~ Where do we go from here?
  - More and better primary benefit studies
  - Better economic modeling of the transfer problem and process
  - Better incentives for replication—a dedicated journal?

What Leads to More Confident BT?

- Greater confidence when 4 criteria are met
  1. There are a large number of primary studies
  2. Inappropriate and inconsistent studies are evaluated and filtered out before transfer or meta analysis
  3. The relevant independent variables are known and available
  4. Results are evaluated using the right econometric error structure

- Problems
  - Too few primary studies, so it's difficult to meet criteria 1, 2, and 4
  - The relevant quantities and qualities are understood for only a few types of resources and environmental goods

Potential for BT: High to Low Confidence

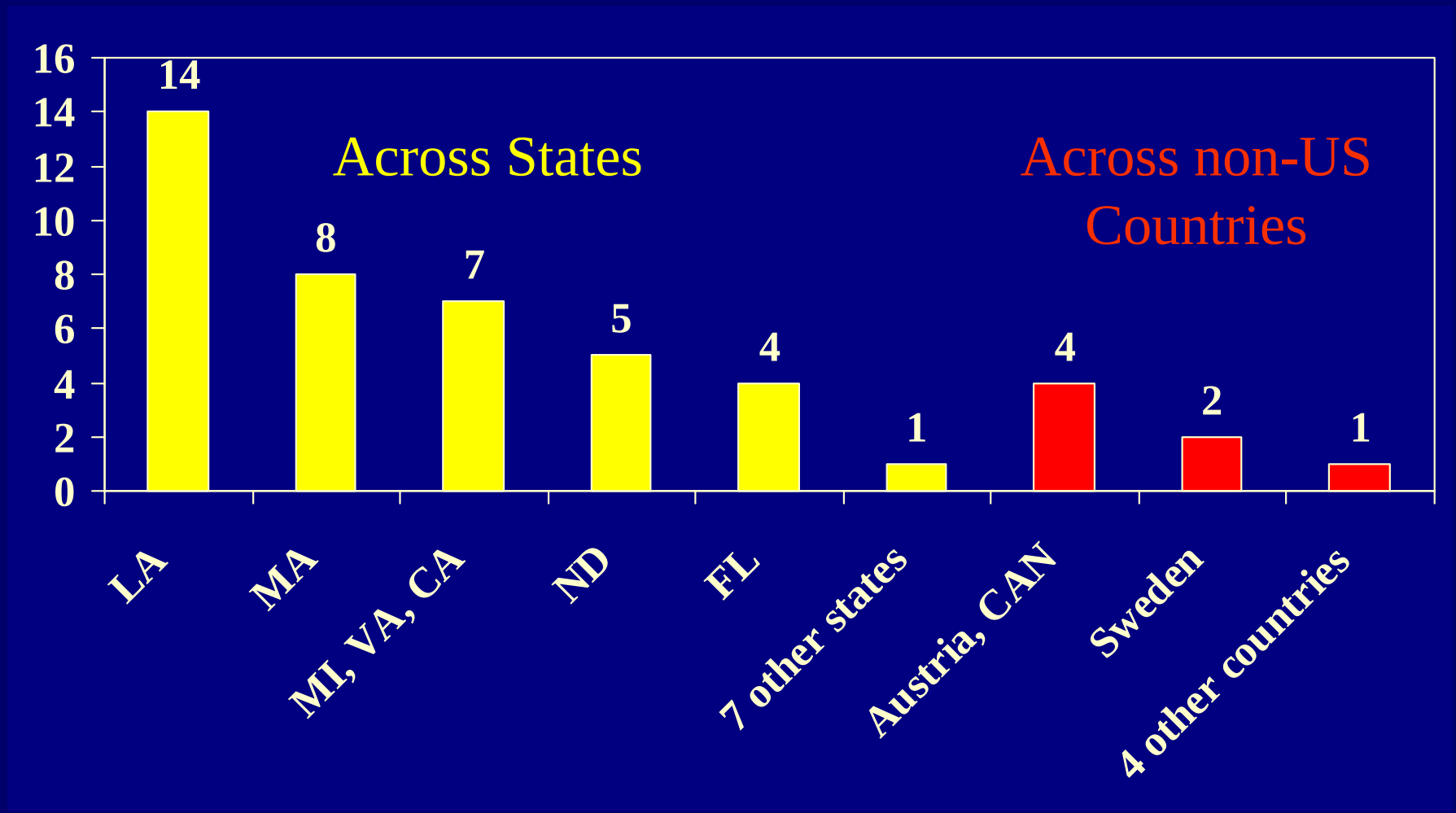
1. High: Generic recreation sites (Rosenberger and Loomis, 2000)
   - Preferences, methods, and data are well understood
     - There are a large number of studies available
     - Valuation techniques understood and cross-corroborated
     - Morey (1994): user day values are stable and comparable across studies
2. High: Occupational mortality risks (Viscusi and Adly, 2003); airport noise
3. Moderate: Air quality; water quality effects on fishing
4. Low: Groundwater (Poe et al, 2002: “extremely cautious”)
   - A moderate number of studies, but the goods valued are not consistent
   - What are the relevant independent variables—risk to health, well, region?
5. Low: Ecosystems
   - Values are not well understood in terms of preference—use, non-use?
   - What are the relevant quantities/qualities? (Kirchoff, 1997; Ruijgrok, 2001)
   - Few studies using consistent methods, values, and independent variables

Limited Data: An Ecosystems Example

- Meta-analysis of wetland values, Woodward and Wui (2001)
  - 65 observations on values, quantities, qualities, and methods
  - Limited data led to:
    - A mixed bag of dependent variables: hedonic values, consumer surplus travel cost values, contingent WTP values, and producer surplus values
    - Uneven panel across studies: 1 study provided 8 values; most 1 value
    - Uneven geographic sample: many values for LA, few for FL
  - What was the result with this mixed and uneven data?
    - Only 4 of 14 quality/quantity coefficients statistically diff. from zero
    - But 4 of 9 methodological coefficients statistically different from zero
    - Potential bias due to uneven sample?

Woodward and Wui Sample:

Number of Observations per Jurisdiction



Potential Bias from Uneven Sample?

Value Estimates with Full Sample Versus Sample Excluding the Non-US Data

Wetland Qualities	Value per Wetland Acre, (full sample)	Percent Change When Excluding non-US data
Bird hunting site	$48	-38%
Bird watching site	$870	-38%
Commercial fishing impact	$443	+43%

What's a Better BT: Point-to-Point or Meta Analysis?

BT Method	Value Estimate	Econometric Structure
Point transfer	$17.61 to 62.88	
Regional average value transfer	$34.11	
Meta analysis transfer		
Regional	$15.64	
Site	$4.77	

Rosenberger and Loomis, 2000

The Errors of Point-to-Point and Meta Analysis

1. Point-to-point transfer: Consider a study site 0 and a policy site 1, each with identical characteristics, x^0. With point-to-point transfer, the study site value, y^0, is the estimated value for the policy site: so y^{1p} is equal to

$$y^0 = x^0\mathbf{\$} + e^0$$

2. Meta analysis: Estimate $y = x\mathbf{b} + u$ with $E(b)= \mathbf{\$}$. We then predict y^1 as

$$y^{1m} = x^0\mathbf{b}.$$

3. The difference between the point transfer value, y^0, and the meta analysis value, y^{1m}, is not zero. It's $x^0(b-\mathbf{\$}) + e^0$ with a variance

$$x^0 var(b-\mathbf{\$})\, x^{0'} + var(y)(1-R^2)$$

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BT Method	Value Estimate	Econometric Structure
Point transfer	$17.61 to 62.88	$y^0 = x^0\$ + e^0$
Regional average value transfer	$34.11	Average of $y^R = x^R\$ + e^R$
Meta analysis transfer		
Regional	$15.64	$y^{Rm} = x^R b$
Site	$4.77	$y^{1m} = x^0 b$

Rosenberger and Loomis, 2000

Why so Few Transferable Benefit Studies?

- Brookshire, 1992, AERE/EPA Workshop on Benefit Transfer:

  "be concerned about…the base of primary studies. This paucity [of primary studies] stems from the existing incentive structure to publish and obtain research funds…replication in economics and the publication of data are not viewed as worthwhile."

- Smith and Pattanayak, ERE, 2002:

  "replication rarely finds a home in refereed journals…Updating results may have…policy value but usually will not be considered important enough to occupy scarce journal space."

Needed: A Peer-Reviewed BT Journal

- Objective:
  - Reward the authors of well-documented applied primary benefit studies with publication in peer-reviewed journals
  - Use the review process to improve the consistency of applied methods
  - Increase the number of studies conducted and reported

- Alternative approaches:
  - A new peer-reviewed e-journal
    - Requires agency funding and professional association support
    - Key issue: review protocols based on acceptable study designs and methods
    - Announce and implement those protocols with a dedicated editorial council
  - Negotiate special sections in existing journals
    - Expand the ERE notes idea; work with editors at Ecol. Econ.
    - Establish clear protocols and acceptance criteria
  - Annual/occasional inventory of short articles in a special issue of a peer-reviewed environmental journal

Benefits of a BT Journal (Section)

1. Incentives for replication, testing, and evaluation of data collection procedures.

2. More, and more complete, data on primary values

3. Encourage standardization of independent variables that support transfer and aggregation (income, qualities, etc)

4. Full reporting of estimates and their statistical properties, including variance-covariance estimates for meta-analyses